

CLAIMS

What is claimed is:

1. A corona discharge electrode assembly for an electrostatic precipitator having a collector electrode spaced from a discharge electrode by a gap to facilitate corona discharge therebetween, said corona discharge electrode assembly comprising a drum extending along an axis and having a pair of annular flanges axially spaced along said drum and extending radially outwardly from said drum, and an electrically conductive strip having a plurality of segments supported by and extending between said annular flanges, said segments having a length dimension extending axially between said annular flanges, a height dimension extending radially relative to said drum, and a width dimension extending normal to said length dimension and to said height dimension, wherein said height dimension is substantially less than said length dimension and substantially greater than said width dimension.
2. The corona discharge electrode assembly according to claim 1 wherein the cross-sectional area of said segments along said width dimension and said height dimension is on the order of 50 times greater than a discharge electrode of wire segments.
3. The corona discharge electrode assembly according to claim 2 wherein said height dimension is in the range of 0.1 to 0.5 inch, and said width dimension is in the range of 0.001 to 0.02 inch.
4. The corona discharge electrode assembly according to claim 1 wherein said strip is a continuous member strung back and forth between said annular flanges.
5. The corona discharge electrode assembly according to claim 4

wherein said segments are strung axially and partially spirally diagonally between said annular flanges.

6. A corona discharge electrode assembly for an electrostatic precipitator having a collector electrode spaced from a discharge electrode by a gap to facilitate corona discharge therebetween, said corona discharge electrode assembly comprising a drum extending along an axis and having a plurality of electrically
5 conductive strips each having a length dimension extending axially along and mounted to said drum, a height dimension extending radially relative to said drum, and a width dimension extending normal to said length dimension and to said height dimension, wherein said height dimension is substantially less than said length dimension and substantially greater than said width dimension.

7. The corona discharge electrode assembly according to claim 6 wherein said strips have a base at said drum, and extend radially outwardly therefrom along said height dimension to an outer tip, and have a first width at said base, and a second width at said outer tip, wherein said first width is greater than said second
5 width.

8. The corona discharge electrode assembly according to claim 7 wherein said outer tip is a knife edge, and said second width is substantially less than said first width.

9. The corona discharge electrode assembly according to claim 6 wherein said strips extend axially and partially spirally diagonally along said drum.

10. A corona discharge electrode assembly for an electrostatic precipitator having a collector electrode spaced from a discharge electrode by a gap to facilitate corona discharge therebetween, said corona discharge electrode assembly

comprising a drum extending along an axis and having an electrically conductive strip
5 wound in a helix around said drum.

11. The corona discharge electrode assembly according to claim 10
wherein said strip has a length dimension extending helically around said drum, a
height dimension extending radially relative to said drum, and a width dimension
extending normal to said length dimension and to said height dimension, wherein said
5 height dimension is substantially less than said length dimension and substantially
greater than said width dimension.

12. The corona discharge electrode assembly according to claim 11
wherein said strip has a base at said drum, and extends radially outwardly therefrom
along said height dimension to an outer tip, and has a first width at said base, and a
second width at said outer tip, wherein said first width is greater than said second
5 width.

13. The corona discharge electrode assembly according to claim 12
wherein said outer tip is a knife edge, and said second width is substantially less than
said first width.

14. The corona discharge electrode assembly according to claim 10
wherein said helix has a constant pitch to provide equal axial spacing of helical
segments of said strip along said drum.

15. The corona discharge electrode assembly according to claim 10
wherein said helix has a variable pitch to provide unequal axial spacing of helical
segments of said strip along said drum.

16. A corona discharge electrode assembly for an electrostatic

precipitator having a collector electrode spaced from a discharge electrode by a gap to facilitate corona discharge therebetween, said corona discharge electrode assembly comprising a drum supporting an electrically conductive strip having a corona
5 discharge edge facing said collector electrode across said gap, said edge being shaped to provide a plurality of corona discharge locations along said strip for corona discharge to said collector electrode.

17. The corona discharge electrode assembly according to claim 16 wherein said edge is serrated.

18. The corona discharge electrode assembly according to claim 16 wherein said edge is wave-shaped.

19. The corona discharge electrode assembly according to claim 18 wherein said edge is sinusoidal.

20. The corona discharge electrode assembly according to claim 16 wherein said edge is sawtooth-shaped.

21. The corona discharge electrode assembly according to claim 16 wherein said edge has a plurality of detents therealong.

22. The corona discharge electrode assembly according to claim 21 wherein said detents are periodic.

23. The corona discharge electrode assembly according to claim 21 wherein said detents protrude outwardly from said edge toward said collector electrode.

24. The corona discharge electrode assembly according to claim 21 wherein said detents are recessed inwardly from said edge away from said collector electrode leaving corona discharge tips at the junctions of said edge and said detents.

25. The corona discharge electrode assembly according to claim 24 wherein said detents are triangular cuts.

26. The corona discharge electrode assembly according to claim 24 wherein said detents are rectangular cuts.

27. The corona discharge electrode assembly according to claim 24 wherein said detents are arcuate cuts.

28. The corona discharge electrode assembly according to claim 16 wherein said drum extends along an axis and has a pair of annular flanges axially spaced along said drum and extending radially outwardly from said drum, and wherein said electrically conductive strip has a plurality of segments supported by
5 and extending between said annular flanges, said segments having a length dimension extending axially between said annular flanges, a height dimension extending radially relative to said drum, and a width dimension extending normal to said length dimension and to said height dimension, wherein said height dimension is substantially less than said length dimension and substantially greater than said width
10 dimension, and wherein said edge extends along said length dimension and said width dimension.

29. The corona discharge electrode assembly according to claim 16 wherein said drum extends along an axis, and said electrically conductive strip comprises a plurality of electrically conductive strips each having a length dimension extending axially along and mounted to said drum, a height dimension extending

5 radially relative to said drum, and a width dimension extending normal to said length dimension and to said height dimension, wherein said height dimension is substantially less than said length dimension and substantially greater than said width dimension, and wherein said edge extends along said length dimension and said width dimension.

30. The corona discharge electrode assembly according to claim 16 wherein said drum extends along an axis, and said electrically conductive strip is wound in a helix around said drum, wherein said strip has a length dimension extending helically around said drum, a height dimension extending radially relative
5 to said drum, and a width dimension extending normal to said length dimension and to said height dimension, wherein said height dimension is substantially less than said length dimension and substantially greater than said width dimension, and wherein said edge extends along said length dimension and said width dimension.

31. A corona discharge electrode assembly for an electrostatic precipitator having a collector electrode spaced from a discharge electrode by a gap to facilitate corona discharge therebetween, said corona discharge electrode assembly comprising an electrically conductive louvered drum having louvers providing a
5 plurality of corona discharge locations along said drum for corona discharge to said collector electrode.

32. The corona discharge electrode assembly according to claim 31 wherein said drum has a drum wall, and said louvers are provided by a plurality of perforations through said drum wall.

33. The corona discharge electrode assembly according to claim 32 wherein said perforations form a plurality of corona discharge tips at the junctions of said drum and said perforations for corona discharge across said gap to said collector

electrode.

34. The corona discharge electrode assembly according to claim 33 wherein said drum extends along an axis and comprises a spiral wound sheet having helical sections joined by axially spaced joints having said perforations therebetween providing said louvers between said joints.

35. The corona discharge electrode assembly according to claim 32 comprising a plurality of flaps extending from said drum toward said collector electrode.

36. The corona discharge electrode assembly according to claim 35 wherein each said flap has a base at the junction of said drum wall and a respective said perforation, and has an outer tip spaced from said collector electrode across said gap.

37. The corona discharge electrode assembly according to claim 36 wherein each said flap comprises a portion of said drum wall, said portion being cut by said perforation, wherein said portion is bent away from said drum and toward said collector electrode along a bend line at said junction of said drum wall and said
5 respective perforation.

38. The corona discharge electrode assembly according to claim 37 wherein said outer tip is pointed, and wherein said respective perforation has a perforation tip distally opposite said bend line at said junction, said perforation tip being complimentary to said pointed outer tip of said flap.

39. The corona discharge electrode assembly according to claim 38 wherein said flap and said respective perforation are of identical triangular shape.

40. A corona discharge electrode assembly for an electrostatic precipitator having a collector electrode spaced from a discharge electrode by a gap to facilitate corona discharge therebetween, said corona discharge electrode assembly comprising a drum extending along an axis and having a plurality of electrically
5 conductive spikes extending radially therefrom to provide a plurality of corona discharge tips spaced from said collector electrode by said gap.